IN THE UNITED STATES
PATENT AND TRADEMARK OFFICE

Patent Application

Inventor(s)	Ye Li	Case Name	Li 113381con
Filing Date		Serial No.	
Examiner		Group Art Unit	
Title	Pilot-Aided Channel Estimation for OFDM in Wireless Systems		

COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, VA 22313-1450

SIR:

PRELIMINARY AMENDMENT

Please amend the above-identified application as follows:

IN THE CLAIMS:

1. (delete).

2. (delete).

3. (delete).

4. (delete).

5. (delete).

6. (delete).

7. (delete).

8. (delete).

9. (delete).

10. (delete).

11. (delete).

12. (delete).

13. (delete).

14. (delete).

15. (delete).

16. (delete).

17. (delete).

18. (delete).

19. (delete).

20. (delete).

21. (New) A method for processing an OFDM signal received over a wireless communication channel, said OFDM signal comprising a packet of a number N of OFDM blocks, each OFDM block comprising a number K of signal tones, the method comprising the steps of

sequentially receiving N channel-impaired OFDM blocks;

computing noisy channel estimates, based on said channel-impaired blocks;

arranging the noisy channel estimates into a first array having a first axis representative of a frequency index of the noisy channel estimates and a second axis representative of a time index of the noisy channel estimates;

performing a two-dimensional inverse Fourier transform on said first array;

multiplying the inverse Fourier transformed first array with a second array representing a two-dimensional filter to thereby form a third array; and

performing a two-dimensional Fourier transform on said third array to thereby form a fourth array comprising elements representative of an estimate of channel parameters for said wireless communication channel.

22. (New) The method of claim 1, wherein the two-dimensional filter is a diamond shaped filter.

23. (New) The method of claim 1, wherein said step of computing the noisy channel estimates is performed by multiplying the elements of each channel-impaired OFDM block with corresponding reference pilot symbol values known to have been inserted into that block upon transmission.

24. (New) The method of claim 1, wherein said step of computing the noisy channel estimates is performed by multiplying the elements of each channel-impaired OFDM block with corresponding estimates of a demodulated signal.

25. (New) The method of claim 1, wherein said step of computing the noisy channel estimates is performed by multiplying the elements of each channel-impaired OFDM block with corresponding estimates of a decoded signal.

26. (New) The method of claim 1, wherein said step of sequentially receiving the N blocks is performed at the receiver by a plurality of antennas, each of said antennas sensing N channel-impaired blocks.

27. (New) A method of estimating channel parameters for a wireless communication channel by transmitting a signal from a transmitter to a receiver, the method comprising the steps of:

inserting pilot symbols at predetermined positions in a plurality of blocks, each block comprising a plurality of data symbols representative of a signal being transmitted;

sequentially transmitting each of said plurality of blocks over a finite number of tones, said finite number of tones being broadcast substantially simultaneously for each block;

sequentially receiving a corresponding plurality of channel-impaired blocks at the receiver;

computing a corresponding plurality of noisy channel estimates from said plurality of channel-impaired blocks;

arranging the plurality of noisy channel estimates into a first array having a first axis representative of a frequency index of the noisy channel estimates and a second axis representative of a time index of the noisy channel estimates;

performing a two-dimensional inverse Fourier transform on said first array;

multiplying the inverse Fourier transformed first array with a second array representing a two-dimensional filter to thereby form a third array; and

performing a two-dimensional Fourier transform on said third array to thereby form a fourth array comprising elements representative of the channel parameters.

28. (New) The method of claim 7, wherein said pilot symbols are inserted with a non-rectangular pattern in a 2-dimensional array that comprises tone bins along one dimension and time along the other dimension.